

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* KJETIL JOHANNESEN

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Appeal 2007-0139  
Application 10/678,026  
Technology Center 1700

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Decided: March 30, 2007

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Before CHUNG K. PAK, JEFFREY T. SMITH, and  
LINDA M. GAUDETTE, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 22-25 and 27-33. We have jurisdiction under 35 U.S.C. § 6.

Appellant invented methods of forming a self-aligning alignment dot on a waveguide. An alignment dot is a small portion of an optical material

placed on an end surface of the core of a waveguide for self-aligning the waveguide with a second waveguide. (Specification 3). Claim 22, as presented in the Brief, appears below:

22. A method of forming a self-aligning alignment dot on an end surface of a waveguide for self-aligning the waveguide with a second waveguide, the method comprising:

applying a mask to an end surface of the waveguide;

ablating a portion of the mask by exposing the mask to a high energy light beam traveling through the waveguide to create a mask opening; and

filling the mask opening with an optical material to form a self-aligning dot, the optical material having a melting point and when melted in proximity of a second alignment dot on a second waveguide, surface tension pulls the waveguide and the second waveguide into alignment with each other.

The Examiner relies on the following reference in rejecting the appealed subject matter:

Hogg	US 5,237,630	Aug. 17, 1993
Kalman	US 5,879,571	Mar. 9, 1999

The Examiner has entered the following grounds of rejection: Claims 22-25, 28, and 31-33 stand rejected under 35 U.S.C. § 102 (b) as anticipated by Kalman. Claims 22-25, 29, and 33 stand rejected under 35 U.S.C. § 102 (b) as anticipated by Hogg. Claims 25, 27, 28, and 30 stand rejected under 35 U.S.C. § 103(a) as obvious over Hogg.

## ISSUES

### I.

The Examiner contends that Kalman describes a method of forming an optical waveguide using a mask to apply an optical material to the end of the core of the waveguide (Answer 4-7).

The Appellant contends that Kalman is directed to forming lenses on optical waveguides and is unrelated to forming a self-aligning alignment dot on a waveguide with an optical material having a melting point, which, when melted in proximity of a second alignment dot on a second waveguide, surface tension pulls the waveguide and the second waveguide into alignment with each other as recited in the claimed invention (Br. 9).

The first issue before us is whether Applicant has shown that the Examiner erred in rejecting the claims 22-25, 28, and 31-33 under 35 U.S.C. § 102 (b). The issue turns on whether the Examiner has established a reasonable belief that the method described by Kalman produces a waveguide that comprise a material that is capable of functioning as a self-aligning alignment dot on an end surface of the core of a waveguide, and, if established, whether the Appellant has adequately rebutted the Examiner's findings by showing that the waveguide material produced by the method of Kalman does not comprise a self-aligning alignment dot. Specifically, the issue is: Does the waveguide material produced by the method of Kalman comprise a material that is capable of functioning as a self-aligning alignment dot on an end surface of the core of the waveguide? We answer this question in the affirmative.

II.

The Examiner contends that Hogg describes a method of forming an optical waveguide using a mask to apply an optical material to an end of the core of the waveguide (Answer 8-9).

The Appellant contends that Hogg is directed to forming reflective materials on optical waveguides and is unrelated to forming a self-aligning alignment dot on a waveguide with an optical material having a melting point, which, when melted in proximity of a second alignment dot on a second waveguide, surface tension pulls the waveguide and the second waveguide into alignment with each other as recited in the claimed invention (Br. 6-9).

The second issue before us is whether Applicant has shown that the Examiner erred in rejecting the claims 22-25, 29, and 33 under 35 U.S.C. § 102 (b) and claims 25, 27, 28, and 30 under 35 U.S.C. §103 (a). The issue turns on whether the Examiner has established a reasonable belief that the method described by Hogg produces a waveguide that comprises a material that is capable of functioning as a self-aligning alignment dot on an end surface of the core of a waveguide, and if established, whether the Appellant has adequately rebutted the Examiner's findings by showing that the waveguide material produced by the method of Hogg does not comprise a self-aligning alignment dot. Specifically, the issue is: Does the waveguide material produced by the method of Hogg comprise a material that is capable of functioning as a self-aligning alignment dot on an end surface of the core of the waveguide? We answer this question in the affirmative.

## FINDINGS OF FACT

Appellant invented a method of forming a self-aligning alignment dot on an end of the core surface of a waveguide for self-aligning the waveguide with a second waveguide (Specification 3, ll. 1-10).

The alignment dot is a small portion of an optical material that is located on the end surface of the core of the waveguide (Specification 3, ll. 2-4).

Thermal polymers, glass, and SOL-GEL are all suitable optical materials for forming self aligning alignment dots. These optical materials have a melting point and when melted in proximity of a second alignment dot on a second waveguide, surface tension pulls the waveguide and the second waveguide into alignment with each other. (Specification 8, ll. 7-11).

An optical probe is used to transfer high energy UV light to the waveguide for photo curing and photo ablation methods (Specification 7, ll. 9-17).

Kalman describes a method of forming lenses on the ends of optical waveguides. The method comprises applying a mask (photoresist) to the end of the waveguide, ablating a portion of the exposed mask, coating the exposed portion with an optical material and removing the remaining mask material. (Col. 8, ll. 31-51).

Kalman discloses suitable transparent materials for forming the lens element, which include a glass or polymers preferably with a lower melting point than that of the optical waveguide core material (Col. 3, ll. 59-62).

Hogg describes a method of forming fiber optical sensors that comprise a reflector material on the end portion thereof. The method comprises applying a mask (photoresist) to the end of the optical fiber, ablating a portion of the exposed mask, utilizing light directed through the fiber ensuring only the core region is exposed, coating the exposed portion with an optical material and removing the remaining mask material. (Col. 7, l. 57- col. 8, l. 12).

Hogg discloses the reflective surfaces are formed by a slice (a semi-reflective splice) bordered by media of different refractive indices, such as glass to doped glass, glass to air, glass to dielectric material, or glass to metal (Col. 1, ll. 41-47).

#### PRINCIPLES OF LAW

Appellant is free to recite features of an apparatus either structurally or functionally. As our reviewing court stated in *In re Schreiber*, 128 F.3d 1473, 1478, 44 USPQ2d 1429, 1432 (Fed. Cir. 1997):

A patent applicant is free to recite features of an apparatus either structurally or functionally. *See In re Swinehart*, 439 F.2d 210, 212, 169 USPQ 226, 228 (CCPA 1971) (“[T]here is nothing intrinsically wrong with [defining something by what it does rather than what it is] in drafting patent claims.”). Yet, choosing to define an element functionally, i.e., by what it does, carries with it a risk. As our predecessor court stated in *Swinehart*, 439 F.2d at 213, 169 USPQ at 228:

where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.

When a claimed product and a product suggested by the prior art reasonably appear to be substantially the same, the burden is shifted to the

Appellant to prove that the suggested prior art product does not possess the claimed functional characteristics. *In re Best*, 562 F.2d 1252, 1255-56, 195 USPQ 430, 433-34 (CCPA 1977).

Under 35 U.S.C. § 103, a prima facie case of obviousness can be established based upon some teaching, suggestion, and/or motivation in the applied prior art reference(s) and/or knowledge generally available to a person having ordinary skill in the art to arrive at the claimed subject matter. *Pro-Mold & Tool Co., Inc. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1629-30 (Fed. Cir. 1996); *ACS Hosp. Systems, Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

## ANALYSIS

### I.

The present record establishes that Kalman describes a method for forming lenses on the ends of optical waveguides. Appellant has not argued that the method steps described in Kalman are different from the present invention. Rather, Appellant argues that Kalman is directed to forming lenses on optical waveguides and is unrelated to forming a self-aligning alignment dot on a waveguide with an optical material having a melting point, which, when melted in proximity of a second alignment dot on a second waveguide, surface tension pulls the waveguide and the second waveguide into alignment with each other as recited in the claimed invention (Br. 9). In other words, Appellant takes the position that the functionally defined alignment dot recited in the claims on appeal is patentably different than the lens on the end of optical waveguides described in Kalman. Appellant's argument is not persuasive because Kalman discloses the use of

glass and polymers in the formation of the lens material. This is the same type of material employed in the present invention to form the alignment dots. Since the lens employed in Kalman's method and the alignment dot employed in the claimed method are identical or substantially identical, it would appear that the claimed functional characteristics would have been inherently present or reasonably expected in the lens material produced by Kalman. As such, the Examiner has established a reasonable basis to conclude that the method described by Kalman produces a waveguide that comprises a lens material (self-aligning alignment dot) that is identical to or substantially identical to that which is produced by the presently claimed invention. Thus, the burden is properly shifted to the Appellant to prove that the prior art lens corresponding to the claimed alignment dot does not possess the claimed functional characteristics. *See In re Best supra.*

Appellant has not directed us to evidence that establishes the lens material of Kalman does not possess the argued melting point and surface tension characteristics of the claimed invention. Thus, we uphold the Examiner's anticipation rejection.

## II.

The present record establishes that Hogg describes a method of forming fiber optic sensors that comprise a reflector material on the end portions thereof. Appellant has not argued that the method steps described in Hogg are different from the present invention. Rather, Appellant argues that Hogg is directed to a method for forming a reflector at a fiber joint splice and is unrelated to forming a self-aligning alignment dot on a waveguide with an optical material having a melting point, which when melted in proximity of a second alignment dot on a second waveguide,



surface tension pulls the waveguide and the second waveguide into alignment with each other as recited in the claimed invention (Br. 7). In other words, Appellant takes the position that the functionally defined alignment dot recited in the claims on appeal is patentably different than the reflector material on the end of the fiber optic sensors described in Hogg. Appellant's argument is not persuasive because Hogg discloses the use of glass and polymers in the formation of the reflector material. This is the same type of material employed in the present invention to form the alignment dots. Since the reflector materials employed in Hogg's method and the alignment dot employed in the claimed method are similar or the same, it would appear that the claimed functional characteristics would have been inherently present or reasonably expected in the reflective material produced by Hogg. As such, the Examiner has established a reasonable basis to conclude that the method described by Hogg produces fiber optic sensors that comprise a reflective material (self-aligning alignment dot) on the end portion thereof that is identical or substantially identical to that which is produced by the presently claimed invention. The burden is, therefore, properly shifted to the Appellant to prove that the suggested prior art product does not possess the claimed functional characteristics. *See In re Best supra*. On this record, Appellant has not directed us to evidence that establishes the reflective material of Hogg does not possess the claimed functional characteristics. Thus, we uphold the Examiner's anticipation rejection.

Now turning to the rejection under 35 U.S.C. § 103. Claims 25 and 27 specify the use of an optical probe connected to the waveguides to provide an ablating light. According to the Specification, the optical probe

is the source of light utilized in the ablation and photo curing methods. The optical probe is used to guide light through the planar waveguide. (*See* Specification 7). The Examiner contends that Hogg describes directing light through the fiber optic material (Answer 9). Appellant has not disputed the Examiner's position. Appellant has not argued that optical probes are unknown to persons of ordinary skill in the art for directing light through optical materials. Consequently, we agree with the Examiner's obviousness determination that it would have been obvious to employ an optical probe as the source of light for guiding light through the optical fiber of Hogg.

Appellant's arguments regarding claim 30 have been noted. However, the claimed subject matter is not directed to the substance of Appellant's arguments.<sup>1</sup> Since Appellant has not presented any substantive arguments directed to the subject matter of claim 30, we will uphold the rejection of claim 30 for the reasons presented by the Examiner.

## CONCLUSION OF LAW

### I.

The Examiner's rejection is supported by a legally sufficient basis for holding that the subject matter of claims 22-25, 28, and 31-33 would have been anticipated by Kalman within the meaning of § 102 (b).

### II.

The Examiner's rejection is supported by a legally sufficient basis for holding that the subject matter of claims 22-25, 28, and 31-33 would have

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<sup>1</sup> It appears that Appellant is referring to claim 32 based upon the content of Appellant's arguments. However, claim 32 is not to subject of a § 103 rejection.

been anticipated by Hogg within the meaning of § 102 (b) and the subject matter of claims 25, 27, 28, and 30 would have been obvious over Hogg within the meaning of §103 (a).

#### DECISION

The Examiner's rejection of claims 22-25, 28, and 31-33 under 35 U.S.C. § 102 (b) as anticipated by Kalman is affirmed.

The Examiner's rejection of claims 22-25, 29, and 33 under 35 U.S.C. § 102 (b) as anticipated by Hogg is affirmed.

The Examiner's rejection of claims 25, 27, 28, and 30 under 35 U.S.C. § 103(a) as obvious over Hogg is affirmed.

Appeal 2007-0139  
Application 10/678,026

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2006).

AFFIRMED

tf/l

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